

REMARKS

The independent claims have been amended to specify that the plant derived resin is polylactic acid as previously recited in claim 5, and that the metal hydrate is aluminum hydroxide and the alkali metal-based substance is sodium oxide in accordance with Table 1.

Claims 1-5 and 8-11 were rejected under 35 U.S.C. 103 over Yamada. This rejection is respectfully traversed.

The rejected claims relates to a flame-retardant thermoplastic resin composition in which 30-55.5% of a plant derived resin which is polylactic acid is combined with 44 to 70% of a flame retardant of which 90% or more is composed of aluminum hydroxide containing sodium oxide impurity in an amount of 0.18% or less.

The Yamada reference has been cited to show a flame retardant having an impurity level of 0.5% or less, and that the impurities present can include, among other materials, sodium oxide. There is no disclosure of an impurity level of 0.18% or less and the Declaration submitted previously establishes that the impurity level in the species actually disclosed in this reference was greater than 0.2%. Moreover, there is no disclosure that the sodium oxide is present in an amount of 0.18% or less, in that Yamada refers to the total amount of impurities and not the sodium oxide impurity level. While the Office Action avers that disclosure is found in Example 16, applicants have been unable to find any indication of the impurity level in that Example in Yamada. Should this contention be repeated, identification of the column and line of that disclosure is respectfully requested.

Yamada teaches at a purity level of about 99.5% is preferred because the shelf stability is improved relative to a lower purity level, but there is no teaching or suggestion in the reference that there is any significant shelf stability increase above 99.5%.

Applicants do agree that this teaching would have motivated one skilled in the art to achieve a purity level of 99.5% in order to have an improved shelf stability but respectfully disagree with the assertion in the Office Action that the person skilled in the art would have a reason to make the purity 99.82% or more. There is nothing in the reference which suggests any advantage can be realized by decreasing the impurity level from 0.5 to any lesser amount, whether that be 0.4 or, as in the claims, 0.18% or less. Given the difficulty and expense to further reduce the impurity level coupled with the lack of any advantage being realized, the skilled person would not undertake to make the impurity level 0.18% or less.

In an earlier Office Action, the Examiner acknowledged that the cost of purification would be a relevant consideration to the person skilled in the art. As pointed out in the Declaration of record, both the difficulty and cost of purification increases as the purity is increased beyond 99.5%. The Office Action does not seek to suggest any motivation for one to undertake the difficult and costly task of reducing the impurities beyond 0.5% when no advantage to be achieved as a result of that effort. The art does not provide a reasonable expectation of any advantage. Applicants do recognize that the person skilled in the art would seek to obtain a balance between purification cost and shelf stability of the metal hydrate, but for the reasons just stated, it is submitted that the skilled person would expect that balance would have be realized at an impurity level of 0.5%. Even assuming for the sake of argument only, since the reference provides no basis for the assumption, that one would want to decrease impurities by another 50%, the impurity

level would still be 0.25%, a level at which the Declaration shows does not realized the degree of fire retardancy achieved by the invention. Nothing suggests that any advantage could be realized by reducing the impurity level by more than 60% to 0.18 % or less.

The application further has a showing of unexpected results. Tables 1 and 3 - 10 and Figure 1 show that when the impurity level was 0.2% or less, the UL94 classification was either V1 or V0 but when the impurity level was greater than 0.2%, the rating was V2. Note that Example 16 of the reference to which explicit reference is made in the Office Action has a rating of V2. The data shows that this dramatic change in flammability changed over a difference of only 0.04% alkali metal content (0.18% to 0.22%), and this is reflected in the drastic change in slope between these data points in Figure 1. As pointed out in the Declaration paragraph 5, these results are not predictable and are surprising and unexpected. It is respectfully submitted that the rejection cannot be maintained in the face of this data and the sworn statement of unpredictability.

In light of the foregoing considerations, none of the other assertions made in the Office Action need be addressed.

Claims 6 and 12-15 were rejected under 35 U.S.C. 103 over Yamada in view of Shiping. This rejection is also respectfully traversed. Shiping has been cited only to show an anti-drip agent, although not used in conjunction with a fire retardant of Yamada. Accordingly, it is not asserted to cure any of deficiencies in Yamada discussed above, and a review shows that it does not, in fact, cure any of the deficiencies in Yamada. The combination cannot, therefore, render these claims unpatentable.

Claims 1-4, 7, 8 and 16-18 were rejected under 35 U.S.C. 103 over the newly cited Imahashi, and claims 6, 12-14 and 20 were rejected under 35 U.S.C. 103 over Imahashi in view of Shiping. These rejections are moot in view of the incorporation of claim 5 into the independent claims.

Claims 5, 9-11 and 19 were rejected under 35 U.S.C. 103 over Imahashi in view of Yamada, and claim 15 was rejected under 35 U.S.C. 103 over Imahashi in view of Yamada and Shiping. Both rejections are respectfully traversed.

As acknowledged in the Office Action, Imahashi does not seek to fire retard any polylactic acid resin. There is nothing of record to suggest a correspondence between that resin and the cellulose or polyester resins noted in the Action which could make substitution a valid contention. The mere fact that both Imahashi and Yamada deal with fire retardancy is an insufficient reason to mix selective and isolated portions of these references. Also, given the fact that when looking solely at the flame retardant in isolation, Yamada has essentially the same disclosure as Imahashi there is no valid reason for even attempting the combination exercise upon which the rejection is based.

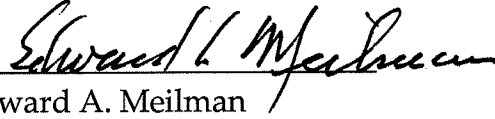
Shiping has not asserted to any of deficiencies in Imahashi or Yamada, and a review shows that it does not, in fact, cure any of those deficiencies.

In light of all of the foregoing amendments and considerations, it is respectfully

submitted that all rejections can now be withdrawn and that this application is in condition for allowance.

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Respectfully submitted,

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